

	UNIVERSITY OF MALTA FACULTY OF MEDICINE & SURGERY PHARMACY DEPARTMENT	Ref. No. SOP/PD/308_02
	STANDARD OPERATING PROCEDURE	
	JOUAN[®] BE 117R WATER DISTILLER	Valid for: 2 years from approval

Table of Contents

	Page
1. Scope	2
2. Objective	2
3. Definitions	2
4. Responsibility	2
5. Procedure	2
5.1. Installation	2
5.2. Operation	4
5.3. Maintenance	5
5.4. Troubleshooting	5
5.5. Flow charts	6
6. Precautions	10
7. References	10
8. Appendices	10
9. Revision History	10

Original	X
Authorised Copy for:	
Reading Copy	✓

Written by:	Conrad Cassar	Signature/Date: C. Cassar 17/04/13
Reviewed by:	Nicolete Sammut Bartolo	Signature/Date: [Signature] 17/04/13
Approved by:	Lilian M Azopardo	Signature/Date: [Signature] 5/8/13

	UNIVERSITY OF MALTA FACULTY OF MEDICINE & SURGERY PHARMACY DEPARTMENT	Ref. No. SOP/PD/308_02
	STANDARD OPERATING PROCEDURE	
	JOUAN® BE 117R WATER DISTILLER	Valid for: 2 years from approval

1. Scope

This Standard Operating Procedure (SOP) applies to the staff and students using the Jouan® BE 117R Water Distiller in the laboratories of the Pharmacy Department, University of Malta.

2. Objective

To describe the procedure for installation, operation, maintenance and troubleshooting of the Jouan® BE 117R Water Distiller.

3. Definitions

- 3.1. Boiling Chamber:** The lower part of the distiller in which tap water is allowed to heat and subsequently vapourise to enter the condenser.
- 3.2. Condenser:** The upper part of the distiller which allows the vapourised water to re-cool and change back into its liquid state to be collected.
- 3.3. Jack Socket:** Used to supply the heating elements when these are connected.
- 3.4. Water Distillation:** The process by which water is purified by means of vapourisation and condensation cycles.

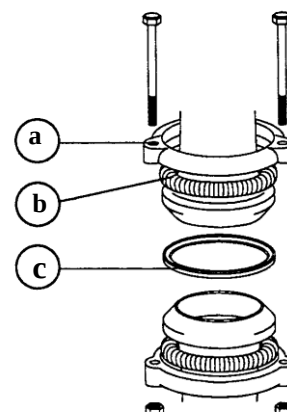
4. Responsibility

- 4.1.** The members of the Department of Pharmacy (staff and students) are responsible for following this SOP.
- 4.2.** The designated Laboratory Officer or Laboratory Assistant is responsible for ensuring that this SOP is followed.

5. Procedure

5.1. Installation

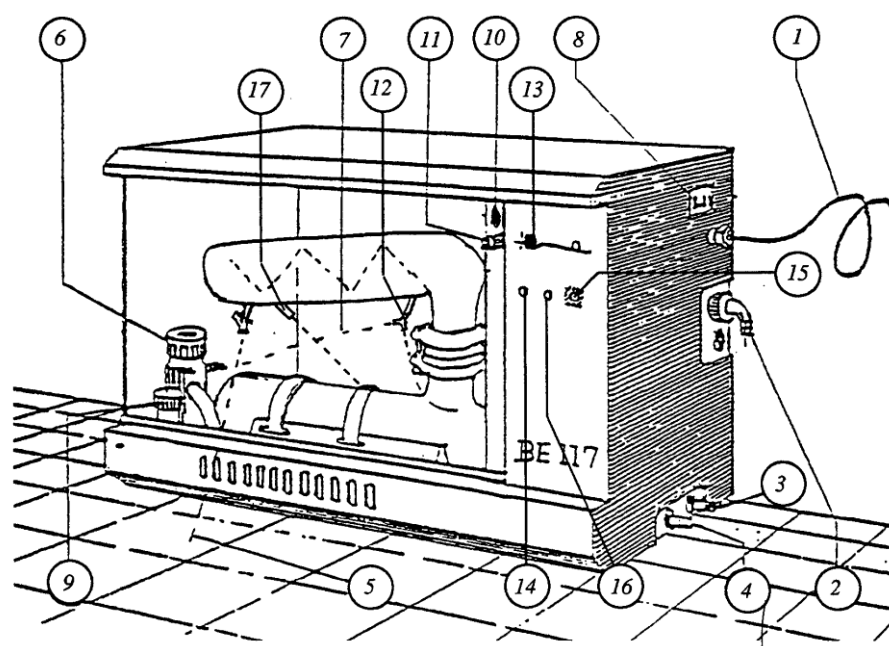
5.1.1. Diagram of Condenser Installation



	UNIVERSITY OF MALTA FACULTY OF MEDICINE & SURGERY PHARMACY DEPARTMENT	Ref. No. SOP/PD/308_02
	STANDARD OPERATING PROCEDURE	
	JOUAN® BE 117R WATER DISTILLER	Valid for: 2 years from approval

- 5.1.2. Place the tension rings [b] onto the necks of the condenser and boiling chamber.
- 5.1.3. Follow the tension rings with the collars [a].
- 5.1.4. Position the condenser on top of the boiling chamber.
- 5.1.5. Place the seal [c] in between with the rim facing downwards.
- 5.1.6. Tighten the structure by using 3 appropriate bolts.

5.1.7. Diagram of Operational Components



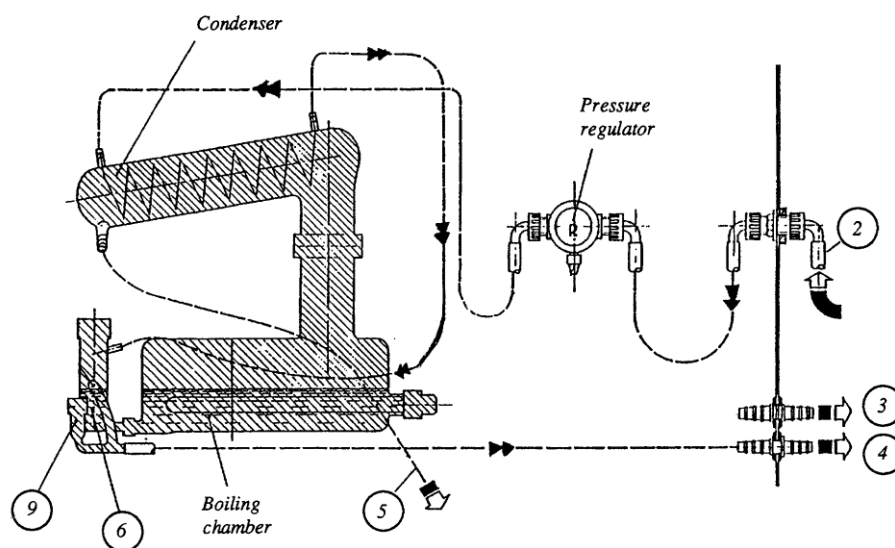
- | | |
|------------------------------|------------------------------|
| 1. Mains cord | 2. Water supply |
| 3. Alternative boiler drain | 4. Boiler drain |
| 5. Distilled water collector | 6. Constant level system |
| 7. Boiler feeding tube | 8. Mains switch |
| 9. Boiler drain tap | 10. Socket for level control |
| 11. JACK socket | 12. Boiler water supply |
| 13. Distillation switch | 14. Overheat alarm light |
| 15. Low flow alarm light | 16. Fuse |
| 17. Condenser feeding tube | |

	UNIVERSITY OF MALTA FACULTY OF MEDICINE & SURGERY PHARMACY DEPARTMENT	Ref. No. SOP/PD/308_02
	STANDARD OPERATING PROCEDURE	
	JOUAN® BE 117R WATER DISTILLER	Valid for: 2 years from approval

- 5.1.8. Connect the condenser feeding tube and the boiler feeding tube to their hose connections at positions [17] and [12] respectively on the condenser.
- 5.1.9. Connect electrical cable at position [1].
- 5.1.10. Connect electrical cable to the mains supply.
- 5.1.11. Connect the water supply line inlet to the hose nozzle at position [2].
- 5.1.12. Connect cooling boiler drain to hose nozzle at position [4].
- 5.1.13. Connect a suitable rubber pipe for distilled water collection at position [5].

5.2. Operation

5.2.1. Diagram of Water Flow Line



- 5.2.2. Check that the boiler drain cock [9] is fully closed.
- 5.2.3. Check that the level tube [6] is tightened.
- 5.2.4. Check that the JACK socket [11] is plugged in.
- 5.2.5. Turn on mains water.
- 5.2.6. Check that there are no water leakages in hydraulic system.
- 5.2.7. Switch on distiller by pressing the mains switch [8].
- 5.2.8. Check that the boiler has an operative water level which may not be so when exceeding water flows out from the overflow [4].
- 5.2.9. Push distillation switch [13] to the 'ON' position.

	UNIVERSITY OF MALTA FACULTY OF MEDICINE & SURGERY PHARMACY DEPARTMENT	Ref. No. SOP/PD/308_02
	STANDARD OPERATING PROCEDURE	
	JOUAN® BE 117R WATER DISTILLER	Valid for: 2 years from approval

5.2.10. Wait until pilot lamp lights up and heating resistors in the boiler turn red.

5.2.11. Check that a little excess water is always overflowing during both boiling and distillation-collection phases to prevent the boiler from draining.

5.3. Maintenance

5.3.1. Wash boiler and level tube periodically whenever scales or residues appear on their walls.

5.3.2. Whenever washing is to be performed:

- 5.3.2.1.** Switch off mains supply [8].
- 5.3.2.2.** Turn off water inlet.
- 5.3.2.3.** Remove the left side panel.
- 5.3.2.4.** Remove the plastic cap from the level tube [6].
- 5.3.2.5.** Half drain boiler by means of the suitable drain cock [9].
- 5.3.2.6.** Introduce at least 250ml of concentrated hydrochloric acid into the level tube.
- 5.3.2.7.** Leave this in situ for some minutes.
- 5.3.2.8.** Open the water inlet cock again.
- 5.3.2.9.** Turn on both the mains and the distillation switch.
- 5.3.2.10.** Wait until water content in the boiling chamber boils.
- 5.3.2.11.** Switch off mains switch.
- 5.3.2.12.** Allow to cool for some minutes.
- 5.3.2.13.** Turn off water supply.
- 5.3.2.14.** Drain the boiler completely [9].
- 5.3.2.15.** Close level tube with stopcock.
- 5.3.2.16.** Turn on water supply to allow rinsing.
- 5.3.2.17.** Throw away the first distillate batch since this may still contain traces of the acid.

5.4. Troubleshooting

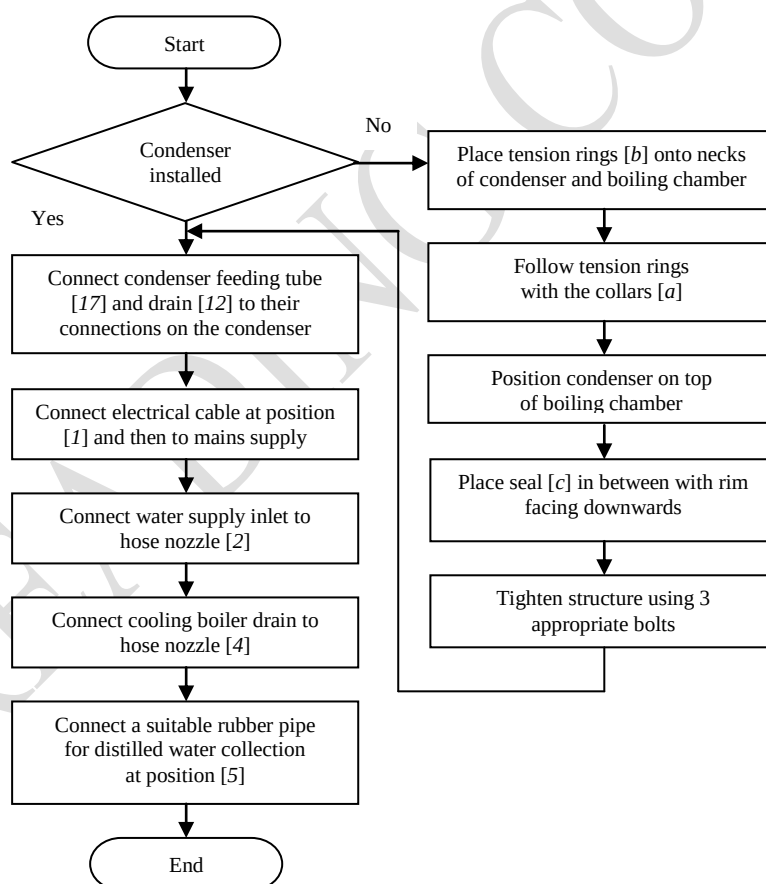
Fault	Possible Cause/s
<i>Overheat Alarm lights up</i>	Boiler overheating or electricity disconnection

	UNIVERSITY OF MALTA FACULTY OF MEDICINE & SURGERY PHARMACY DEPARTMENT	Ref. No. SOP/PD/308_02
	STANDARD OPERATING PROCEDURE	
	JOUAN® BE 117R WATER DISTILLER	Valid for: 2 years from approval

<i>Low Flow Alarm lights up</i>	Temporary failures such as pressure leakage in cooling circuit (heating resistor is automatically switched off)
---------------------------------	---

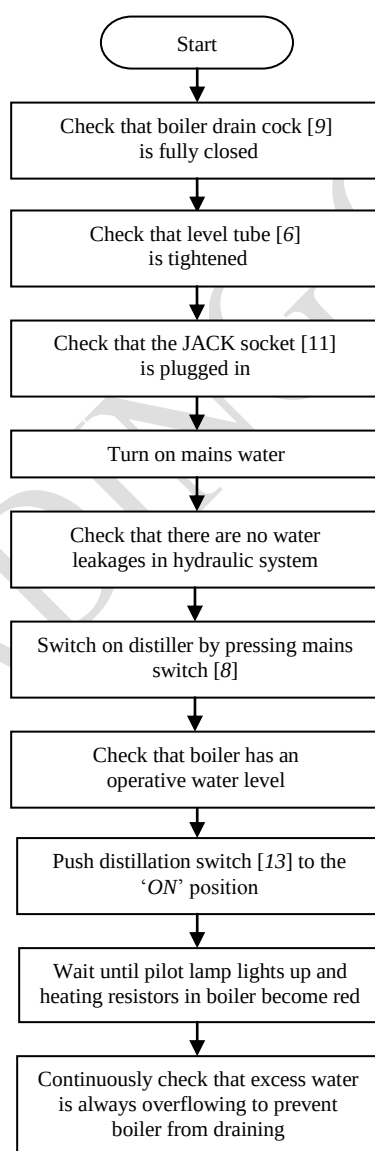
5.5. Flow Charts

5.5.1. Installation

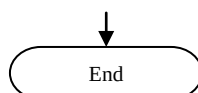


	UNIVERSITY OF MALTA FACULTY OF MEDICINE & SURGERY PHARMACY DEPARTMENT	Ref. No. SOP/PD/308_02
	STANDARD OPERATING PROCEDURE	
	JOUAN[®] BE 117R WATER DISTILLER	Valid for: 2 years from approval

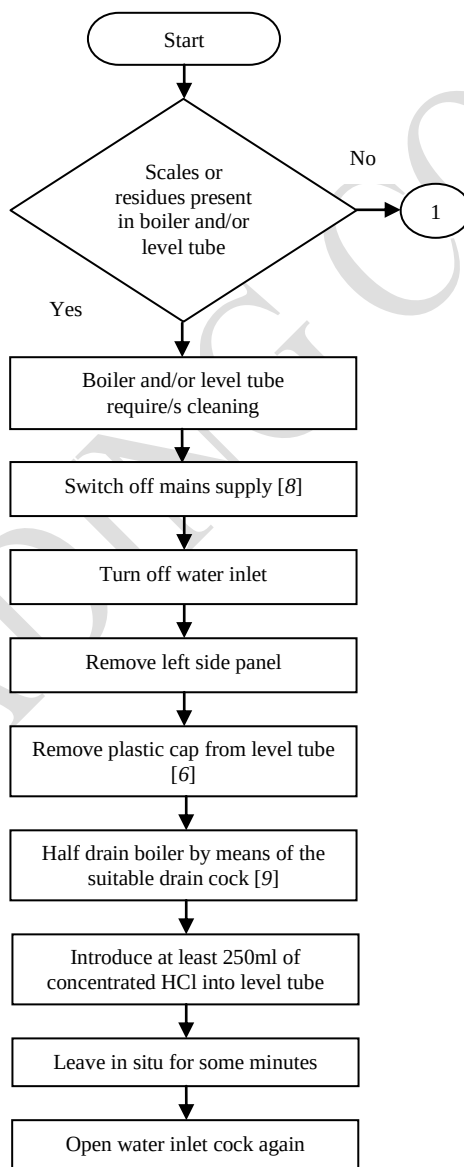
5.5.2. Operation



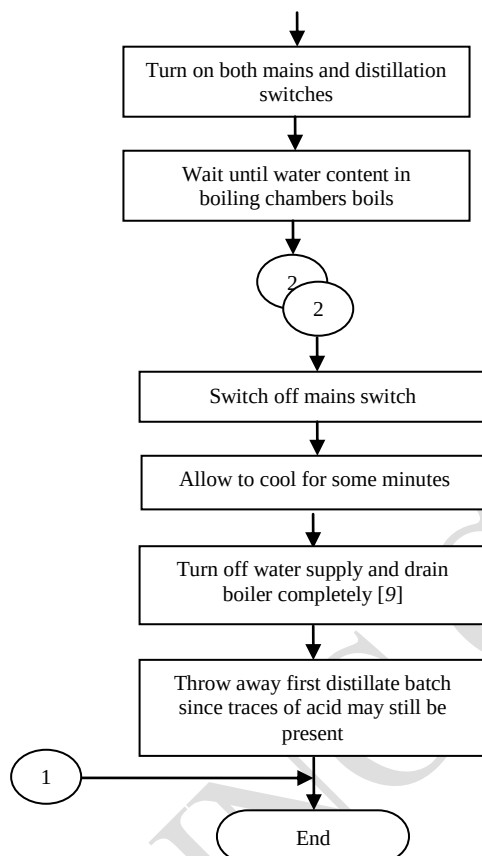
	UNIVERSITY OF MALTA FACULTY OF MEDICINE & SURGERY PHARMACY DEPARTMENT	Ref. No. SOP/PD/308_02
	STANDARD OPERATING PROCEDURE	
	JOUAN® BE 117R WATER DISTILLER	Valid for: 2 years from approval



5.5.3. Maintenance



	UNIVERSITY OF MALTA FACULTY OF MEDICINE & SURGERY PHARMACY DEPARTMENT	Ref. No. SOP/PD/308_02
	STANDARD OPERATING PROCEDURE	
	JOUAN® BE 117R WATER DISTILLER	Valid for: 2 years from approval



	UNIVERSITY OF MALTA FACULTY OF MEDICINE & SURGERY PHARMACY DEPARTMENT	Ref. No. SOP/PD/308_02
	STANDARD OPERATING PROCEDURE	
	JOUAN® BE 117R WATER DISTILLER	Valid for: 2 years from approval

6. Precautions

- 6.1. Before starting up the distiller, always check that:
 - 6.1.1. Boiler drain cock [9] is fully closed
 - 6.1.2. Level tube [6] is tightened
 - 6.1.3. JACK socket [11] is plugged in
 - 6.1.4. Boiler has an operative water level
- 6.2. During both the boiling phase and distillation-collection phase, check that a little excess water is overflowing in order to prevent the boiler from draining.
- 6.3. When the overheat alarm lights up, always try to identify the actual cause/s for the boiler overheating before trying to use the distiller again.
- 6.4. Perform regular cleaning measures to maintain the distiller in efficient working order.

7. References

Jouan. Ovens and Incubators (EU/EB) User's Manual. Saint Herblain: Jouan; 1989.

8. Appendices

N/A

9. Revision History

Version Number	Amendments/ Reasons for change
01	Initial Release
02	Inclusion of subheading titles of Procedure section in Table of Contents

	UNIVERSITY OF MALTA FACULTY OF MEDICINE & SURGERY PHARMACY DEPARTMENT	Ref. No. SOP/PD/308_02
	STANDARD OPERATING PROCEDURE	
	JOUAN [®] BE 117R WATER DISTILLER	Valid for: 2 years from approval

READING COPY